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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,726	05/27/2005	Michael Joseph Bowe	BOWE-15782	4296
25628	7590	08/08/2006	EXAMINER	
LAW OFFICES OF WILLIAM H. HOLT 12311 HARBOR DRIVE WOODBIDGE, VA 22192			PARSA, JAFAR F	
			ART UNIT	PAPER NUMBER
			1621	
DATE MAILED: 08/08/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/536,726

Applicant(s)

BOWE ET AL.

Examiner

Jafar Parsa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 10-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/25/2005</u>   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Election/Restrictions*

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-9, drawn to a process for performing Fischer-Tropsch synthesis.

Group II, claim(s) 10-14, drawn to an apparatus for performing a Fischer-Tropsch synthesis.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the process of claims 1-9 can be practiced with an apparatus disclosed in US patent 6,211,255. Therefore, there is no special technical feature that uniquely linked the inventions together. For instance the apparatus of Group II can be utilized for preparing variety of chemical reactions. Such as, reforming hydrocarbon and ammonia synthesis.

During a telephone conversation with Mr. Holt on 7/13/2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-9. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

1. The following headings are required for a utility application under 37 CFR

1.77(b)

- a) title of the invention,
- b) cross-reference to related application,
- c) background of the invention,
- d) summary of the invention,
- g) brief description of drawings, and
- h) detailed description of the invention.

Appropriate corrections are required.

### ***Specification***

2. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schanke et al (USPN 6,211,255) in view of Schweitzer et al (US 2003/0018089 A1).

Applicants' claimed invention is directed to a process for performing Fischer-Tropsch synthesis using at least one compact catalytic reactor unit defining channels for the Fischer-Tropsch synthesis reaction in which there is a gas-permeable catalyst structure, wherein a carbon-monoxide-containing gas undergoes Fischer-Tropsch synthesis in at least two successive stages, the gas flow velocity in the first stage being sufficiently high that no more than 70% of the carbon monoxide undergoes the synthesis reaction in the first stage, the gases being cooled between the successive stages so as to condense water vapour, and the gas flow velocity in the second stage being sufficiently high that no more than 70% of the remaining carbon monoxide undergoes the synthesis reaction in the second stage.

Schanke teaches a process for a Fischer-Tropsch synthesis which has high mass transfer characteristics at the catalyst. The reactor comprises a monolithic catalyst

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comprising a solid body defining discrete and continuous channels extending from one end of the body to the other. The walls of the channels contain a conventional Fischer-Tropsch catalyst; conventional promoters may also be included. See abstract.

Schanke discloses that it is evident from FIG. 9 that the difference in reactor height for the SBCR and MR is relatively small for low-moderate conversions (up to about 60%). However, for conversions above 80% and in particular above 90%, the difference in reactor height becomes significant. For the fixed bed reactor, the high linear velocity makes it virtually impossible to achieve high single pass conversions. See col. 4, lines 36-42. The space velocity, which is disclosed in Example 3 overlaps with the space velocity disclosed in the instant claimed invention.

The monolith 12 as shown in FIGS. 3, 4a and 4b is cylindrical, though any suitable shape could be employed such as rectangular. It comprises an outer wall 21, preferably formed of the same material as the monolith body which is formed with regular longitudinal channels 22 of square section though, again, any shape could be employed. The channels 22 are discrete and continuous and extend from one end of the monolith to the other. In this case the monolith 12 is of low surface area cordierite, the surface area being 0.1 to 1.0 m<sup>2</sup> /g. The walls of the channels 22 have a layer 23 of a high surface area material, such as  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, the surface area being about 200 m<sup>2</sup> /g. This material is impregnated with an active catalyst material such as Co with a promoter such as Re. See col. 7, lines 1-19.

The difference between Schanke and the claimed invention is that Schanke does not specify the conversion of carbon monoxide in each stage. However, Schanke

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teaches that low –moderate conversions up to about 60% is achievable based on high linear gas velocity. It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the reaction condition by using high gas velocity in a first and second stage in order to obtain high overall conversion of carbon monoxide

Claim 9 requires that water vapor does not exceed 20 mole% and gases are cooled so as to condense water vapor. Schanke is silent in regard to water vapor present in the Fischer-Tropsch synthesis reaction. However, Schweitzer et al teach that in a Fischer-Tropsch synthesis reaction gases are cooled in order to condense the water vapor because it is important not to use fluids that can deactivate the catalyst, for example water or water vapor for a Fischer-Tropsch reaction with a catalyst that contain cobalt. See paragraph 0069. It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to remove the water vapor in a Fischer-Tropsch synthesis reaction in order to prolong the catalyst life.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2 and 9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 3 and 4 of U.S. Patent No. 7,067,561.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the difference between US patent 7,067,561 and the claimed invention is that US patent No. 7,067,561 recites that the conversion of carbon monoxide should not exceed more than 75% in each stage. However, low –moderate conversions up to about 75% is achievable based on high linear gas velocity. It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the reaction condition by using high gas velocity in a first and second stage in order to obtain high overall conversion of carbon monoxide.

Claim 3 of US patent No. 7,067,561 requires that water vapor does not exceed 26 mole%. However, it is well known in the art that in a Fischer-Tropsch synthesis reaction gases are cooled in order to condense the water vapor because it is important not to use fluids that can deactivate the catalyst, for example water or water vapor for a Fischer-Tropsch reaction with a catalyst that contain cobalt. It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to

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remove the water vapor in a Fischer-Tropsch synthesis reaction in order to prolong the catalyst life.

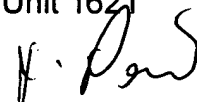
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jafar Parsa whose telephone number is (571)272-0643. The examiner can normally be reached on 8 a.m.-4:30 p.m. (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JP  
July 17, 2006

Jafar Parsa  
Primary Examiner  
Art Unit 1621



**J. PARSA**  
**PRIMARY EXAMINER**